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EXAMINER

LE, DUY K

ART UNIT	PAPER NUMBER
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2685

DATE MAILED: 08/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/067,234

Applicant(s)

KOKUBO, MASARU

Examiner

Duy K Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 9, 13, 17-20 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 7, 8, 10-12 and 14-16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Priority*

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 03/14/2001. It is noted, however, that applicant has not filed a certified copy of the 2001-071641 application as required by 35 U.S.C. 119(b). The certified copy of the priority document that was filed was a certified copy of the 2001-071773 application.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the application prior art (Admission) in view of Wentzler (U.S. Patent 5,151,665).

As to claim 1, Admission discloses an FM transmitter (page 1, lines 13-22), comprising: a phase lock loop (page 1, lines 13-15); an adder to add up a frequency shift to a signal of said phase lock loop, said frequency shift corresponding to a transmission signal (page 2, lines 19-22 and page 3, lines 3-7); and a controller to receive a signal regarding start and idle of said phase lock loop (page 2, lines 11-19).

However, Admission does not disclose a charging pump in a phase lock loop and a controller to output a control signal to control an output of said charging pump. The Wentzler reference teaches a charging pump in a phase lock loop (see Col. 4, lines 57-65 and Figure 2) and

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the controller to output a control signal to control an output of said charging pump (see Col. 7, lines 1-6, 13-20, and Figure 2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmitter of Admission to further comprise a charging pump in a phase lock loop and a controller to output a control signal to control an output of said charging pump, as taught by Wentzler, in order to have a phase lock loop system which can be switched between a slow and fast transition state.

As to claim 17, Admission discloses an FM transmitter, comprising: a phase lock loop including a sample-and-hold circuit; and an adder to add up a frequency shift to a signal of said phase lock loop, said frequency shift corresponding to a transmission signal,

However, it does not disclose a phase lock loop not including a sample-and-hold circuit wherein said phase lock loop is controlled to switch status of said phase lock loop between open and closed without the use of a sample-and-hold circuit.

The Wentzler reference teaches a phase lock loop not including a sample-and-hold circuit (see Col. 4, lines 57-65 and Figure 2) wherein said phase lock loop is controlled to switch status of said phase lock loop between open and closed without the use of a sample-and-hold circuit (see Col. 7, lines 1-6, 13-20, and Figure 2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmitter of Admission to comprise a phase lock loop not including a sample-and-hold circuit wherein said phase lock loop is controlled to switch status of said phase lock loop between open and closed without the use of a sample-and-hold

circuit, as taught by Wentzler, in order to have a phase lock loop system which can be switched between a slow and fast transition state.

As to claim 18, Admission-Wentzler discloses the FM transmitter according to claim 17, wherein said phase lock loop includes a charging pump (Wentzler: see Col. 4, lines 57-65 and Figure 2), and wherein said FM transmitter includes a controller to receive a signal regarding start and idle of said phase lock loop (Admission: see page 2, lines 11-19), and to output a control signal to control an output of said charging pump (Wentzler: see Col. 7, lines 1-6, 13-20, and Figure 2).

4. Claims 2-3, 6, 9, 13, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the application prior art (Admission) in view of Wentzler (U.S. Patent 5,151,665) and further in view of Juntunen et al. (U.S. Patent 6,163,711).

As to claim 2, Admission-Wentzler discloses the FM transmitter according to claim 1, wherein said FM transmitter further comprises: a buffer amplifier to input a signal from said phase lock loop and to output a signal to an antenna (Admission: see page 2, lines 26-29), and outputs a control signal to control an output of said charging pump to switch status of said phase lock loop between open and closed (Wentzler: see Col. 7, lines 1-6, 13-20, and Figure 2).

However, it does not disclose the controller further receives a signal regarding start and idle of said buffer amplifier. The Juntunen reference teaches the controller further receives a signal regarding start and idle of said buffer amplifier (see Col. 5, lines 10-33, and 55-57, Col. 2, lines 63-67, and Figure 2. The controller monitors and receives indication whether the phone is in the call mode and provides on/off control of the amplifier to terminate transmission).

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmitter of Admission-Wentzler wherein the controller further receives a signal regarding start and idle of said buffer amplifier, as taught by Juntunen, in order to conserve power.

As to claim 3, Admission-Wentzler discloses an FM transmitter according to claim 1, wherein said phase lock loop further includes a phase comparator, a loop filter, a voltage controlled oscillator, and a counter (Admission: see page 1, line 23 to page 2, line 10), wherein said FM transmitter further comprises to output a signal to an antenna (Admission: see page 2, lines 26-29), and wherein said FM transmitter further comprises a controller to receive a start/idle signal of said phase lock loop (Admission: see page 2, lines 11-19), and to output a control signal to hold an output of said charging pump in a high resistance state (Wentzler: see Col. 7, lines 1-6, 13-20, and Figure 2).

However, it does not disclose the controller receives a start/idle signal of said buffer amplifier. The Juntunen reference teaches the controller receives a start/idle signal of said buffer amplifier (see Col. 5, lines 10-33, and 55-57, Col. 2, lines 63-67, and Figure 2. The controller monitors and receives indication whether the phone is in the call mode and provides on/off control of the amplifier to terminate transmission).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmitter of Admission-Wentzler wherein the controller receives a start/idle signal of said buffer amplifier, as taught by Juntunen, in order to conserve power.

As to claim 6, Admission-Wentzler-Juntunen discloses the FM transmitter according to claim 3, wherein said charging pump is provided with a logical circuit to suppress a frequency control signal output from said phase comparator according to a control signal output from said controller (Wentzler: see Col. 5, lines 12-31, Col. 7, lines 1-6, 13-20, and Figure 2).

As to claim 9, Admission-Wentzler-Juntunen discloses the FM transmitter according to claim 3, wherein said charging pump is provided with a switch to reset a bias current to zero according to a control signal output from said controller (Wentzler: see Col. 5, lines 12-31, Col. 7, lines 1-6, 13-20, and Figure 2).

As to claim 13, Admission discloses a transmitter to transmit a signal with FM modulation, wherein the transmitter receives a start/idle signal of a phase lock loop circuit (see page 2, lines 11-19). However, it does not disclose the transmitter receives a start/idle signal of a buffer amplifier, and outputs a control signal to hold an output of a charging pump at a first level of resistance at which a bias current is substantially zero, and wherein said phase lock loop circuit is moved into open loop control when the output of the charge pump is held at the first level of resistance.

The Wentzler reference teaches the transmitter outputs a control signal to hold an output of a charging pump at a first level of resistance at which a bias current is substantially zero, and wherein said phase lock loop circuit is moved into open loop control when the output of the charge pump is held at the first level of resistance (see Col. 4, lines 57-65, Col. 7, lines 1-6, 13-20, and Figure 2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmitter of Admission wherein the transmitter outputs a

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control signal to hold an output of a charging pump at a first level of resistance at which a bias current is substantially zero, and wherein said phase lock loop circuit is moved into open loop control when the output of the charge pump is held at the first level of resistance, as taught by Wentzler, in order to have a phase lock loop system which can be switched between a slow and fast transition state.

However, Admission-Wentzler does not disclose the transmitter receives a start/idle signal of said buffer amplifier. The Juntunen reference teaches the transmitter receives a start/idle signal of said buffer amplifier (see Col. 5, lines 10-33, and 55-57, Col. 2, lines 63-67, and Figure 2. The controller monitors and receives indication whether the phone is in the call mode and provides on/off control of the amplifier to terminate transmission).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmitter of Admission-Wentzler wherein the transmitter receives a start/idle signal of said buffer amplifier, as taught by Juntunen, in order to conserve power.

As to claim 19, Admission-Wentzler discloses the FM transmitter according to claim 17, wherein said FM transmitter includes a buffer amplifier to input a signal from said phase lock loop and to output a signal to an antenna (Admission: see page 2, lines 26-29). However, it does not disclose the buffer amplifier is provided to receive a signal regarding start and idle of said buffer amplifier through from another path than the path from said phase lock loop. The Juntunen reference teaches the buffer amplifier is provided to receive a signal regarding start and idle of said buffer amplifier through from another path than the path from said phase lock loop (see Col. 5, lines 10-33, and 55-57, Col. 2, lines 63-67, and Figure 2. The controller monitors and



receives indication whether the phone is in the call mode and provides on/off control of the amplifier to terminate transmission).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmitter of Admission-Wentzler wherein the buffer amplifier is provided to receive a signal regarding start and idle of said buffer amplifier through from another path than the path from said phase lock loop, as taught by Juntunen, in order to conserve power.

As to claim 20, Admission-Wentzler discloses the FM transmitter according to claim 17, wherein said phase lock loop includes a charging pump (Wentzler: see Col. 4, lines 57-65 and Figure 2), and wherein said FM transmitter further comprises: a buffer amplifier to input a signal from said phase lock loop and to output a signal to an antenna (Admission: see page 2, lines 26-29); and a controller to receive a signal regarding start and idle of said phase lock loop (Admission: see page 2, lines 11-19), and to output a control signal to control an output of said charging pump to switch status of said phase lock loop between open and closed (Wentzler: see Col. 7, lines 1-6, 13-20, and Figure 2).

However, it does not disclose the controller to receive a signal regarding start and idle of said buffer amplifier. The Juntunen reference teaches the controller to receive a signal regarding start and idle of said buffer amplifier (see Col. 5, lines 10-33, and 55-57, Col. 2, lines 63-67, and Figure 2. The controller monitors and receives indication whether the phone is in the call mode and provides on/off control of the amplifier to terminate transmission).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmitter of Admission-Wentzler wherein the controller

receives a signal regarding start and idle of said buffer amplifier, as taught by Juntunen, in order to conserve power.

***Allowable Subject Matter***

5. Claims 4, 5, 7, 8, 10-12, 14-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claims 4, 7, 10, and 15, the prior art of record fails to show or fairly suggest a controller comprises a delay circuit to delay a start/idle signal of said buffer amplifier; and a flip-flop circuit to receive an output of said delay circuit at one input terminal and a start/idle signal of said phase lock loop at the other input terminal, said flip-flop circuit being set by said start/idle signal of said phase lock loop and reset by said output of said delay circuit, in combination with other features cited in claims 4 and 15. Claims 7 and 10 are dependent on claim 4.

As to claims 5, 8, 11, and 16, the prior art of record fails to show or fairly suggest a controller comprises a preamble detector to detect a preamble signal included in said transmission signal and a flip-flop circuit to be set by said start/idle signal of said phase lock loop and reset by said output of said preamble detector, in combination with other features cited in claims 5 and 16. Claims 8 and 11 are dependent on claim 5.

As to claim 12, the prior art of record fails to show or fairly suggest a controller comprises an offset detector to detect an offset of the number of "H" or "L" generated transmission signals, said offset detector detecting whether an absolute integration value that

denotes said offset of the number of generated "H" or "L" transmission signals, obtained by integrating said transmission signals, exceeds a predetermined threshold; and a flip-flop circuit to be set by said start/idle signal of said phase lock loop and reset by said output of said offset detector, in combination with other features cited in the claim.

As to claim 14, the prior art of record fails to show or fairly suggest a transmitter for FM transmission, wherein said signal to be transmitted has a preamble, and said phase lock loop circuit is controlled for the loop to be closed or opened based on said preamble.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Jokura (U.S. Patent 5,379,002) discloses frequency synthesizer using intermittently controlled phase locked loop.
- b. Sanchez et al. (U.S. Patent 5,428,317) discloses phase locked loop with low power feedback path and method of operation.
- c. Dacus et al. (U.S. Patent 6,223,061) discloses apparatus for low power radio communications.
- d. Kim et al. (U.S. Patent 6,069,537) discloses double mode modulator.
- e. Hasegawa (U.S. Patent 6,133,770) discloses phase locked loop circuit.
- f. Grunwell (U.S. Patent 5,499,392) discloses filter having a variable response time for filtering an input signal.
- g. Larsson (U.S. Patent 6,163,184) discloses phase locked loop (PLL) circuit.

- h. Dai et al. (U.S. Patent 6,211,740) discloses switching a clocked device from an initial frequency to a target frequency.
  - i. Giolma et al. (U.S. Patent 4,110,707) discloses indirect FM modulation scheme using phase locked loop.
  - j. Takaki et al. (U.S. Patent 4,609,886) discloses PLL modulation circuit.
  - k. Shearer et al. (U.S. Patent 5,126,692) discloses variable frequency system having linear combination of charge pump and voltage controlled oscillator.
  - l. Bezzam et al. (U.S. Patent 6,115,586) discloses multiple loop radio frequency synthesizer.
  - m. Oka (U.S. Patent Application Publication 2001/0036239 A1) discloses phase locked loop circuit and method of frequency modulation in phase locked loop circuit.
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duy K Le whose telephone number is 703-305-5660. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F Urban can be reached on 703-305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Duy Le  
July 15, 2004



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